

Appl. No. 10/814,408
Second Preliminary Amendment

AMENDMENT TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1-23. (Canceled)

24. (Currently Amended) An oxygenates to olefins fluidized bed reactor apparatus for converting an oxygenate feed to olefins in a riser reactor which comprises:

(a) an oxygenate feed line communicating with a riser reactor feed inlet to said riser reactor, said riser reactor further comprising a riser reactor outlet for riser reactor effluent containing solid catalyst particles and olefins-containing vapor;

(b) a preheater through which said oxygenate feed line passes for at least partially vaporizing said feed by heat exchange with a fluid heating medium flowing through said preheater;

~~said riser reactor further comprising a riser reactor outlet for riser reactor effluent containing solid catalyst particles and olefins-containing vapor;~~

(c) a disengaging vessel for receiving said riser reactor effluent and separating at least some of said solid catalyst particles from said effluent, said disengaging vessel further comprising a disengaging vessel outlet at an upper portion of said vessel for removing said olefins-containing vapor;

(d) a catalyst circulation line running downward from a lower portion of said disengaging vessel to a lower portion of said riser reactor;

(e) a regenerator comprising a lower inlet for introducing a regeneration medium, an upper outlet for regenerator flue gas, said regenerator further comprising a catalyst transport line running downwardly from a lower portion of said disengaging vessel to a regenerator catalyst inlet, and a catalyst transport line extending downwardly from a regenerated catalyst outlet and intersecting with a lift gas riser, said lift gas riser having an upper outlet communicating with

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said disengaging vessel and a lower lift gas inlet; and ~~said reactor apparatus further comprising at least one of:~~

~~A) a heating medium flow control valve controlling the flow of said fluid heating medium through said preheater, which heating medium flow control valve is manipulated as a function of temperature of said feed measured at a point between said preheater and said riser reactor feed inlet;~~

~~B) an oxygenate feed flow control valve controlling the flow of said feed from said preheater to said reactor inlet which is manipulated as a function of feed flow measured at a point between said preheater and said riser reactor inlet;~~

~~C) a catalyst circulation control valve controlling circulation of catalyst from said disengaging vessel to said riser reactor, said catalyst circulation valve being manipulated as a function of the difference in pressure between an upper portion of said riser reactor and a lower portion of said riser reactor; and~~

~~D) (f) a regenerator catalyst circulation control valve controlling the passage of catalyst from said regenerated catalyst outlet to said lift gas riser, said regenerator catalyst circulation control valve being manipulated as a function of riser reactor temperature.~~

25-29. (Canceled)

30. (Currently Amended) The apparatus of claim 24, wherein said riser reactor temperature is measured by a temperature sensor at a point ranging from 30% to 40% of said riser reactor length, measured from said feed inlet of the riser reactor.

31. (Currently Amended) The apparatus of claim 24, wherein said function of riser reactor temperature is a reactor mid-temperature taken by a temperature sensor at a single location between about 20% to about 80% of the axial length of the reactor.

32. (Currently Amended) The apparatus of claim 24, wherein said function of riser reactor temperature is a rate of temperature rise measured by a temperature sensor along a portion of the reactor.